

DARWIN VS. LAMARCK



The Evolution of Evolutionary Thought



Understanding Use & Disuse, Malthusian Limits, and the Mechanism of Natural Selection.

Lamarck's Theory: The Mechanism of 'Use and Disuse'

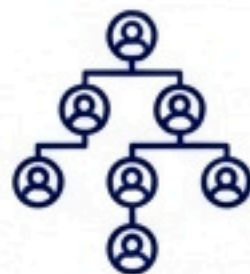
Card 1: The Trigger: Inner Need

Environmental changes create new needs for an organism.



Card 3: The Legacy: Inheritance of Acquired Characters

The physical modifications an organism acquires during its lifetime are passed directly to its succeeding generations.

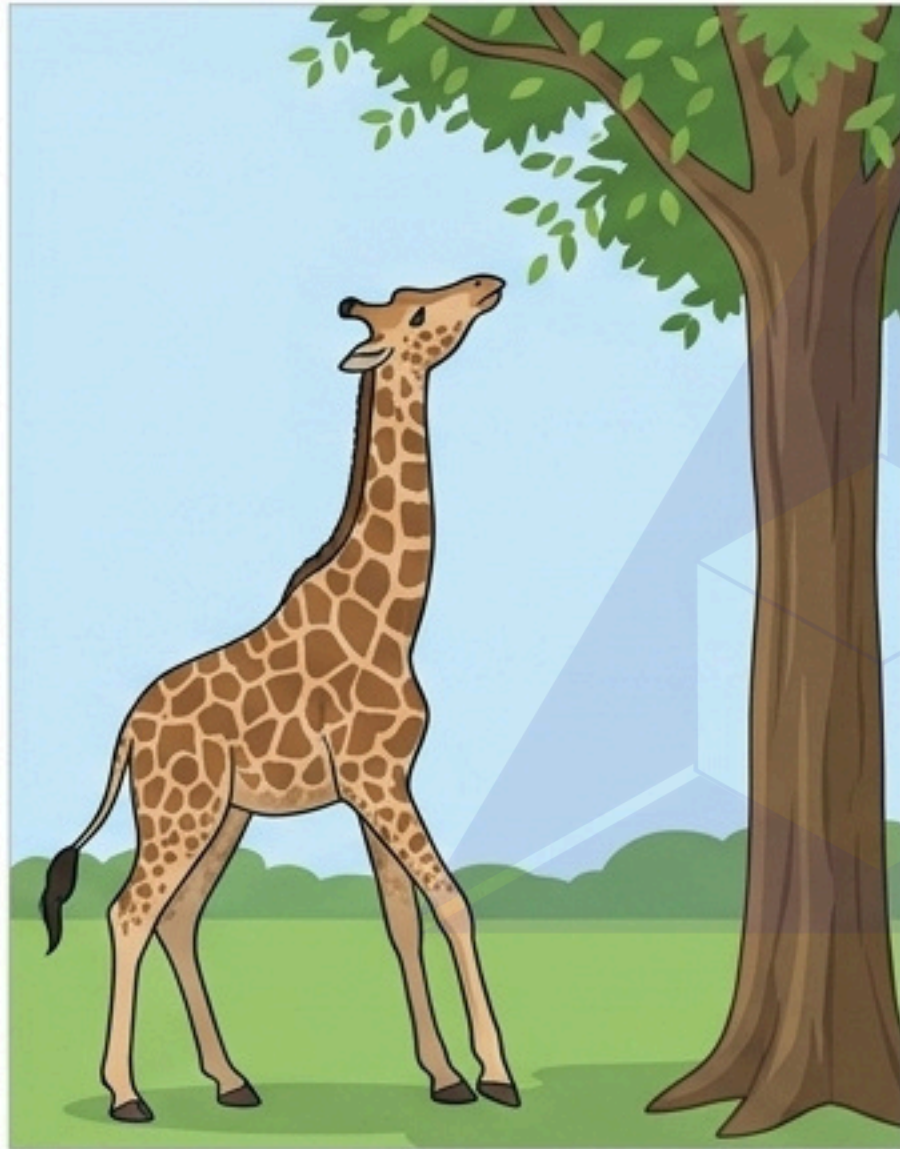


Card 2: The Mechanism: Use and Disuse

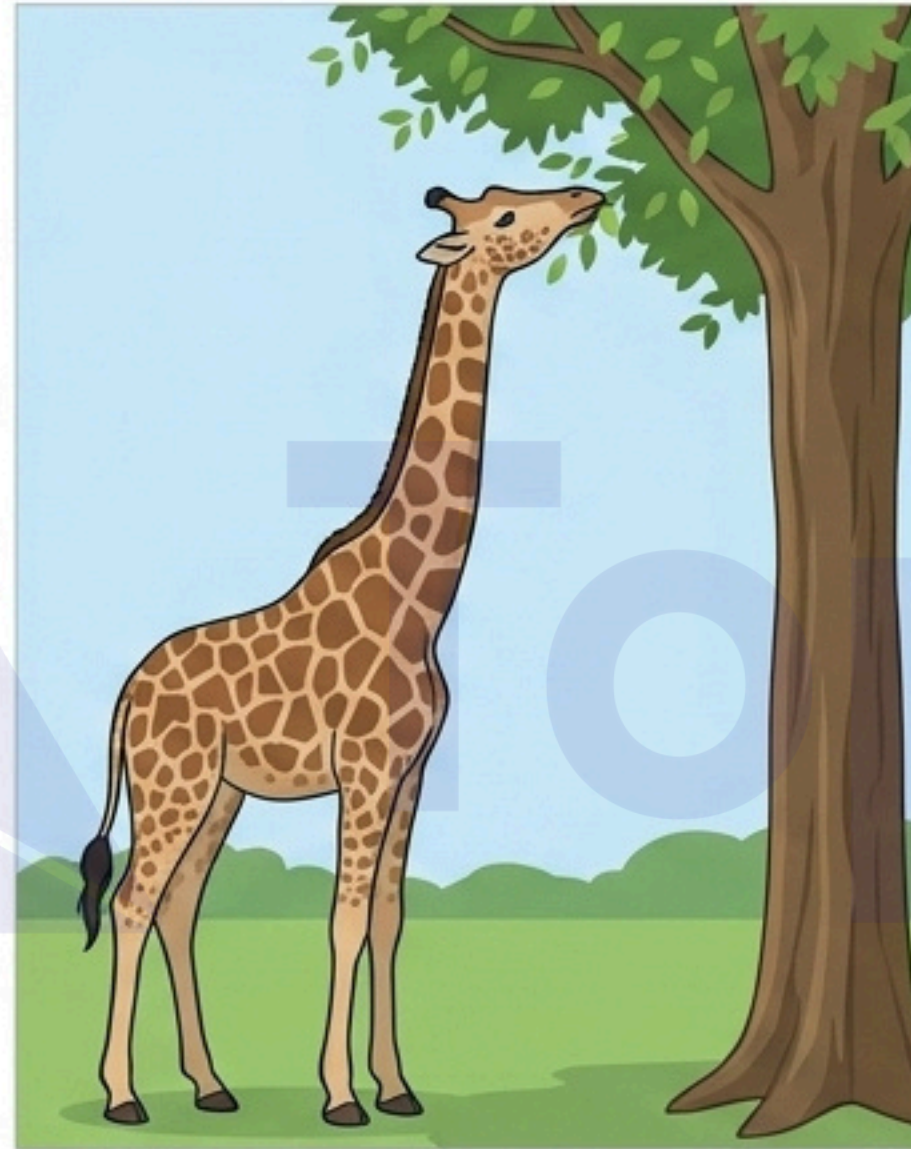
Organs used frequently to meet these needs become stronger and larger. Organs that are disused deteriorate or disappear.



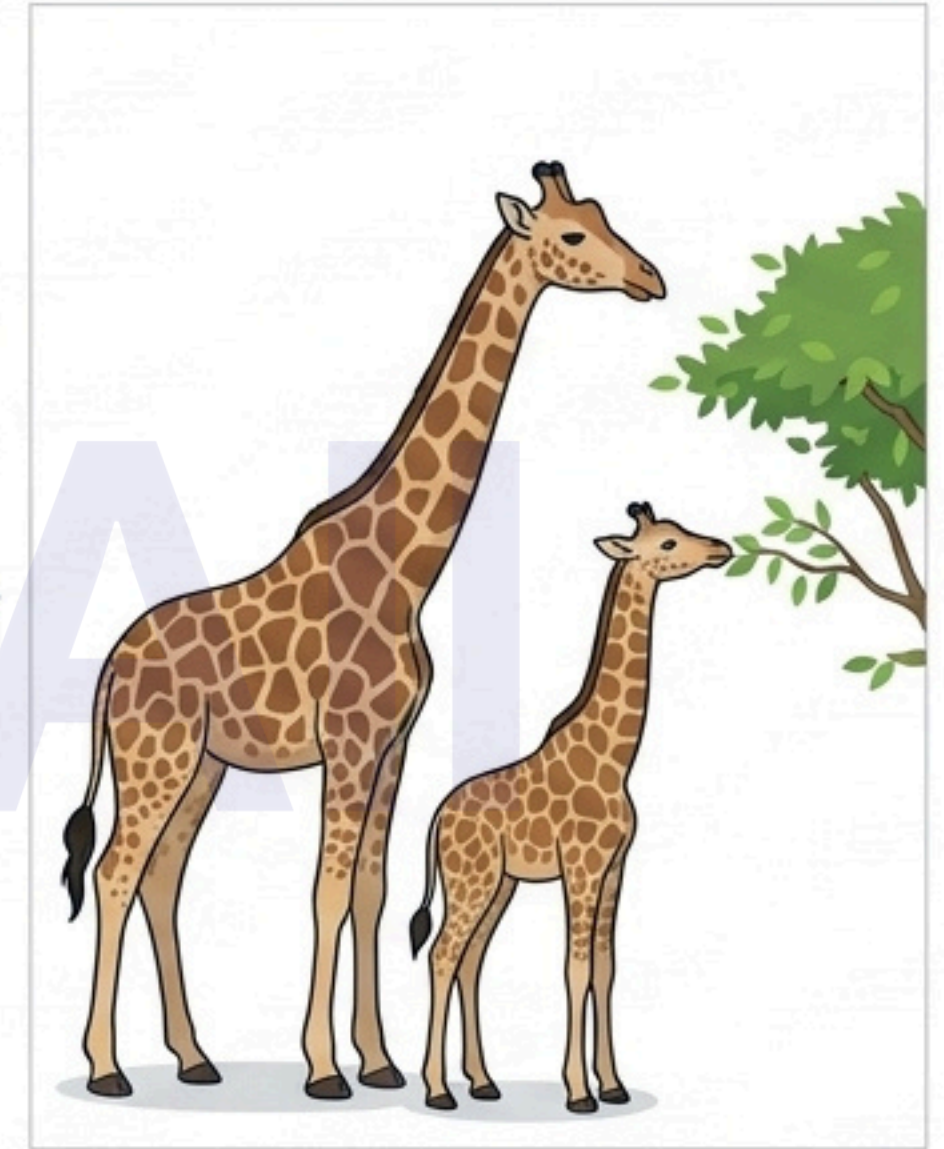
The Classic Case Study: The Giraffe's Neck



The attempt to forage leaves on tall trees created an inner need.



The physical effort of stretching caused the neck to elongate (Use).



This lifetime acquired character is passed to the succeeding generation.



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$$E=mc^2$$



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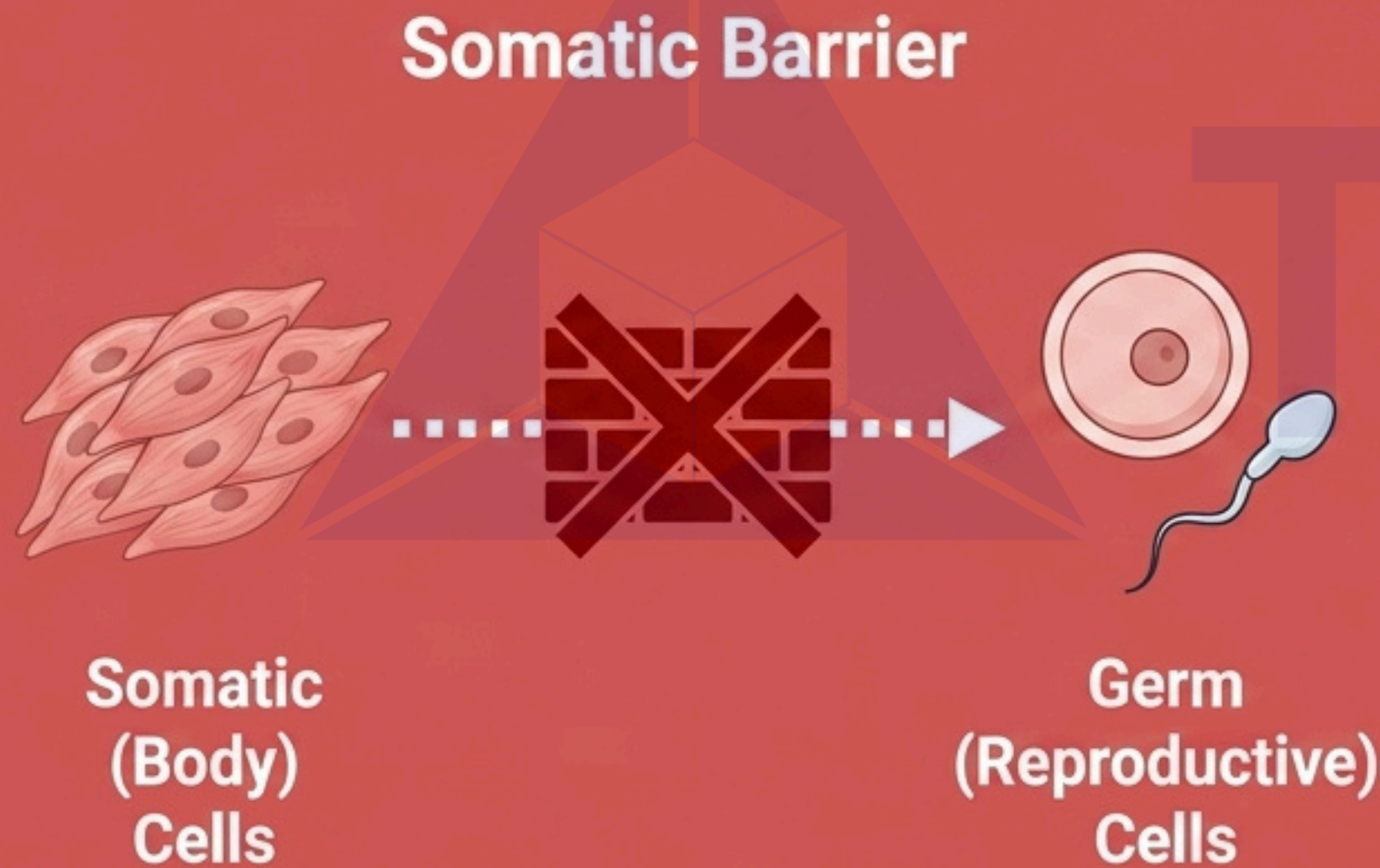
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Nobody believes this conjecture any more.



Changes to somatic (body) cells—like building a muscle or stretching a neck—do not alter the organism's DNA.

Only genetic information contained in germ cells (sperm/egg) is passed to offspring.

Therefore, physical effort cannot create heritable biological evolution.

The Malthusian Limit: The Catalyst for Darwin

The work of Thomas Malthus provided the factual observation Darwin needed.



Theoretically, populations grow exponentially if everybody reproduces maximally.

In reality, natural resources are strictly limited, keeping population sizes stable.

This inevitable collision guarantees severe competition for survival.

Darwin's Synthesis: The Mechanism of Natural Selection



Key Takeaway: The Paradigm Shift

Takeaway

	Lamarck	Darwin
Driver of Change	Inner biological need and conscious effort (Use & Disuse).	Environmental pressure and competition for resources.
Source of Variation	Acquired dynamically during the organism's lifetime.	Inherent, pre-existing genetic variations present at birth.
Evolutionary Pace	Needs-driven alterations passed down instantly.	Gradual, differential survival over many successive generations.

Bottom Line: Nature selects pre-existing genetic fitness; organisms do not consciously develop traits to pass on.



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